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THE LAND MOLLUSCA OF MONTEGO BAY, JAMAICA; WITH NOTES ON THE LAND MOLLUSCA OF THE KINGSTON REGION.

BY H. A. PILSBRY AND A. P. BROWN.

1. The Mollusca of Montego Bay.

The species included in this list were taken on the Orange Hill and Rose Mount estates, which lie to the east of the town of Montego Bay, and along the roadsides in this direction. The hills which enclose Montego Bay on the east rise rather abruptly from the sea level, but are dissected by many ravines. One of these, on the Orange Hill estate, is deep enough to produce permanently moist conditions during the summer months. This gully is generally without running water; but when the ground is thoroughly saturated by rains, a heavy thunder shower "makes the gully come down," as the natives express it, in a raging torrent. This depression is probably formed by the falling in of the roof of a cave, and indeed a cave still exists leading off from one side of this gully, the mouth of which is some 20 feet above the bottom of the present gully. The sides of the gully are densely wooded, as are many of the lateral branches which drain into it; the trees may be original forest. It can be travelled for about a mile to a neighboring estate known as Rose Mount, where the ground rises considerably higher and exposures of the limestone in place are met with upon the hill tops. Here again are some patches of original forest. But the land about Montego Bay, with exception of a few places, has all been cleared of its original forest many years ago, and much of this cleared land has been at some time under cultivation.

Where the cleared land was planted in orange or logwood, it is now often grown up in a thicket; this is especially true of the old logwood plantations on the Orange Hill estate. These occupy the tops of dry hills, where the limestone soil, although dry, harbors many small snails which prefer a dry habitat. The greater part of the cleared fields on these estates are used for pastures, but these are sometimes stony and dry also. In the lower grounds, on some of the adjoining estates, sugar-cane is grown, and this was found to be poor collecting ground.

Messrs. Henderson and Simpson[1] have noted 37 species as occurring in their collections at Montego Bay. Seventeen of these are also in the collection here listed, leaving 23 species of the present list new records for Montego Bay, while about 20 species of their list are not represented in the present collection. They probably included species from some miles on either side.

HELICIDÆ.

Pleurodonte lucerna (Müll.).

Recent shells were sparingly found at Orange Hill and Rose Mount. Semi-fossil shells were plentiful in the clay-filled fissures in the limestone in the Orange Hill gully. It is perhaps extinct at Montego Bay, as all shells found were old.

Pleurodonte sloaneana (Shutt.).

Orange Hill and Rose Mount, abundant. It was generally found crawling on the ground, but during very rainy weather was seen ascending the trees in great numbers to escape the wet in the Orange Hill gully.

Pleurodonte sinuata (Müller).

Semi-fossil in the clay veins in the limestone at Orange Hill gully, also at the cave on the Orange Hill place, imbedded in clay. These semi-fossil shells are smaller than those of the living species found elsewhere in the island.

Dimensions range from alt. 12.4 mm., diam. 22.5 mm., to alt. 16 mm., diam. 27.3 mm.

Pleurodonte (Dendrocochlis) aspera (Fér.).

Orange Hill. The specimens collected had been used by land hermit crabs, but the species is arboreal and not uncommon in the cocoanut and banana plantations.

Pleurodonte (Eurycratera) jamaicensis (Gmel.).

Orange Hill. Semi-fossil in the clay-filled fissures in the limestone, but probably extinct at this place, though found living somewhere in the vicinity.

Zaphysema columellata (C. B. Ad.).

Semi-fossil in the clay-filled fissures in the limestone at Orange Hill gully; no living forms were observed; perhaps extinct.

Proserpinula infortunata (Bland).

Orange Hill.

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[1] *Nautilus*, VIII, 1894, pp. 1, 19, 31.

Thysanophora spreta (C. B. Ad.).

Orange Hill and Rose Mount. Found plentifully in the logwood plantations and the dry pasture fields.

Thysanophora apex (C. B. Ad.).

Orange Hill. This small species is evidently rare; but few specimens were taken.

Thysanophora diminuta (C. B. Ad.).

Orange Hill and Rose Mount. Very abundant in the dry logwood plantations.

Thysanophora dioscoricola (C. B. Ad.).

Orange Hill.

Thysanophora inconspicua (C. B. Ad.).

Orange Hill.

Sagda montegoensis n. sp.

Orange Hill and Rose Mount. Living individuals of this species were very plentiful in August, moving about in the damp gullies, especially at Orange Hill.

ACHATINIDÆ.

Opeas micra (Orb.).

Orange Hill. Very plentiful in the old logwood plantations.

Opeas gracile (Hutt.).

Orange Hill.

Opeas pumilum (Pfr.).

Orange Hill.

Subulina octona (Brug.).

Orange Hill, Rose Mount, and Catharine Hall. Plentiful along roadsides with exposures of dry limestone rock near Montego Bay.

Leptinaria pallida (C. B. Ad.).

Orange Hill.

Leptinaria striosa (C. B. Ad.).

Orange Hill.

UROCOPTIDÆ.

Urocoptis gravesii (C. B. Ad.).

Orange Hill and Rose Mount.

Brachypodella robertsi (C. B. Ad.).

Orange Hill.

Brachypodella alba striata Pils.

Orange Hill. Very plentiful after rains, crawling on the moist rocks in the gully.

Spirostemma tenella (C. B. Ad.).

Orange Hill and Rose Mount. Very common in the dry logwood plantations at Orange Hill.

OLEACINIDÆ.

Varicella blandiana (C. B. Ad.).

Orange Hill.

Varicella propinqua (C. B. Ad.).

Orange Hill and Rose Mount.

Sigmataxis læviusculus (C. B. Ad.).

Orange Hill.

FERUSSACIDÆ.

Cecilioides (Cæcilianopsis) iota (C. B. Ad.).

Orange Hill.

SUCCINEIDÆ.

Succinea latior C. B. Ad.

Orange Hill. Found rather sparingly along the roadsides and in the logwood plantations.

TRUNCATELLIDÆ.

Geomelania vicina C. B. Ad.

Orange Hill, in the dry logwood plantations.

Geomelania pygmæa C. B. Ad.

Orange Hill.

Geomelania (Chittya) sinuosa Chitty.

Orange Hill. A small species of *Geomelania*, about half the size of *G. pygmæa*, was collected at Orange Hill, but while about ten specimens were taken, none are sufficiently well developed for a satisfactory description.

The species listed as "*Geomelana gracilis* (C. B. Ad.)" from Bloomfield and Benmore, Mandeville, in our former paper on the Mollusca of Mandeville[2] is *Geomelania vicina* C. B. Ad.

CYCLOPHORIDÆ.

Aperostoma (Ptychocochlis) corrugatum (Chitty).

Orange Hill and Rose Mount. Semi-fossil shells were very plentiful in the clay-filled rifts in the limestone at Orange Hill gully; fresh shells were common in the same locality. This seems a favorite species with the land hermit crab.

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[2] The Mollusca of Mandeville, Jamaica, and its Environs. Proc. Acad. Nat. Sci. Phila., 1910, p. 521.

Aperostoma dubiosum (C. B. Ad.).

Orange Hill. Found living in the Orange Hill gully, also in the clays with the other semi-fossil specimens.

ERICIIDÆ (CYCLOSTOMATIDÆ).

Colobostylus bronni (C. B. Ad.).

Orange Hill, Rose Mount. Very plentiful in the Orange Hill gully, moving over the moist rocks. After rains, this species was seen at both localities ascending trees to escape the wet, and resting upon the trunk under shelter of the branches. They frequently ascended the trees for 20 or 30 feet. Many of the specimens collected were paired when taken.

Adamsiella irrorata Gloyne.

Orange Hill. Very common in the Orange Hill gully, moving about upon damp rock surfaces.

HELICINIDÆ.

Helicina neritella angulata C. B. Ad.

Orange Hill and Rose Mount.

Stoastoma.

Eight species of this genus were collected at Orange Hill and Rose Mount.

Eutrochatella pulchella (Gray).

Orange Hill and Rose Mount.

Alcadia palliata (C. B. Ad.).

Semi-fossil in the clay-filled fissures in the limestone, Orange Hill gully.

Lucidella aureola (Fer.).

Orange Hill and Rose Mount. Very plentiful in the dry logwood plantations and among the rock exposures on the Rose Mount estate.

Lucidella persculpta n. sp.

Orange Hill and Rose Mount.

PROSERPINIDÆ.

Proserpina nitida Gray.

Orange Hill.

2. Notes on the Mollusca of the Kingston Region.

Collections in the vicinity of Kingston were made at Rockfort, on the slopes of Long Mountain; near Constant Spring; at Stony Hill—all in the parish of St. Andrew. Rockfort and Constant Spring are easily reached by trolley from the centre of Kingston; Stony Hill is within easy walking distance from the end of the trolley line at Constant Spring or it may be reached by driving from the same point.

The Rockfort station is at the base and on the slope of Long Mountain, a hill which divides the Liguanea plain in which Kingston lies from the valley of Hope River. The collections were made near the quarry in the soft limestone that is located near the old fort; also on the raised beaches and the lower slope of the hill. The hillside is grown up in "bush," lignum vitæ, logwood, tree cactus, "wild pines," or species of the *Bromeliaceæ,* and various thorny shrubs make progress through the thickets rather slow. The raised beach is some 20 or 30 feet above the present water level in the bay and is covered with fragments of limestone mixed with recent marine shells. It is wooded like the rest of the hillside and is very porous and dry.

Ascending the hill slope, the surface becomes covered by loose pieces of the limestone and is even more dry than the raised beach. When this locality was visited in the previous March, during the dry season, very few living mollusks were seen except the arboreal *Oxystyla undata jamaicensis* Pils., which was observed on the tree cactus as well as in the branches of the other trees and shrubs growing near Rockfort Garden, and *Tudora armata* (C. B. Ad.), which was found sparingly, moving about on a damp exposure of the limestone. In the summer, however, when showers are more frequent, a considerable number of the species were taken alive. The prevailing characteristic of this Rockfort station is its general dryness throughout most of the year.

The plateau of limestone rock which forms the high land in the centre of the island, as at Mandeville, extends to the east as far as Constant Spring, where it abuts against the older rocks of the Blue Mountain. Certain spurs of this plateau, reaching out to the northeast, form by their dissection isolated limestone hills, rising from the Liguanea plain. These are near the hotel at Constant Spring, and from some of these little isolated hills the species recorded as from Constant Spring were obtained. The main mass of one of these spurs, rising rather steeply from the Constant Spring level to an elevation of 1,000 feet, becomes the hill marked on the maps as Stony Hill, and the same name has been given to the small village at the top of the hill along the main post road across the island from Kingston to St. Mary Parish.

HELICIDÆ.

Cepolis (Hemitrochus) graminicola (C. B. Ad.).

Roadsides near Constant Spring.

Cepolis (Dialeuca) subconica (C. B. Ad.).

Stony Hill.

Pleurodonte acuta semperfluens n. subsp.

Near Constant Spring and at Stony Hill.

Pleurodonte acuta sublucerna Pils.

Rockfort. Found abundantly on the raised beaches and lower hill slopes. Only weathered shells were collected, but it is probably living at this station. The size varies much; the teeth are two, variable in size, but the outer is more regular. Dimensions of four specimens follow:

Alt. 19, diam. 37.3 mm.
" 18, " 35 "
" 17.8, " 32.5 "
" 14, " 27 "

Pleurodonte sinuosa (Fer.).

Stony Hill and Constant Spring.

Pleurodonte (Eurycratera) jamaicensis (Gmel.).

Stony Hill. Only one rather weathered shell was found.

Thysanophora spreta (C. B. Ad.).

Stony Hill.

Thysanophora turbiniformis (Pfr.).

Stony Hill.

Thysanophora apex (C. B. Ad.).

Stony Hill; rare.

Thysanophora diminuta (C. B. Ad.).

Rockfort, Constant Spring, and Stony Hill.

Thysanophora dioscoricola (C. B. Ad.).

Stony Hill.

Thysanophora epistyliulum (C. B. Ad.).

Stony Hill.

Sagda spei P. & B.

Only found at Rockfort.

Sagda cookiana (Gmel.).

Constant Spring and Stony Hill.

Sagda jayana (C. B. Ad.).

Stony Hill. Probably topotypes; this is very likely where C. B. Adams's original specimens of this species were collected. See descriptions of new species below.

BULIMULIDÆ.

Oxystyla undata jamaicensis Pils.

Rockfort. Arboreal in the logwood and lignum-vitæ trees, also in the tree-cactus, upon which they were very plentiful in August.

ACHATINIDÆ.

Opeas micra (Orb.).

Stony Hill and Constant Spring, St. Andrews.

Subulina octona (Brug.).

Stony Hill and Constant Spring, St. Andrews.

UROCOPTIDÆ.

Urocoptis sanguinea (C. B. Ad.).

Constant Spring and Stony Hill, St. Andrews. Very plentiful along the roadsides and in the limestone exposures at both of these localities.

Urocoptis brevis (Pfr.).

Rockfort. Crawling about on the exposed rocks after rain.

Brachypodella seminuda (C. B. Ad.).

Stony Hill.

Brachypodella chemnitziana (Fér.).

Stony Hill.

OLEACINIDÆ.

Varicella dissimilis Pils.

Stony Hill.

Varicella costulata (C. B. Ad.).

Stony Hill.

CYCLOPHORIDÆ.

Aperostoma (Ptychocochlis) varians (C. B. Ad.).

Constant Spring and Stony Hill.

ERICIIDÆ (CYCLOSTOMATIDÆ).

Tudora fecunda (C. B. Ad.).

Constant Spring.

Tudora armata (C. B. Ad.).

Rockfort. Upon visiting this locality after a rain, the individuals of this species were so plentiful that their movement could be heard as a continuous rustling of the dry fallen leaves under the trees. They were pairing actively. During dry times large numbers were seen collected under stones in a resting condition.

Adamsiella grayana Pfr.

Stony Hill.

HELICINIDÆ.

Eutrochatella pulchella (Gray).

Stony Hill.

3. Descriptions of New Species, etc.

Pleurodonte acuta semperfluens n. subsp. Pl. XLIII, figs. 15, 16.

This form is rather thinner than *P. a. goniasmos*, with the peripheral angle in the last third of the last whorl becoming subobsolete or the periphery may be flattened and obliquely weakly corrugated; *the last whorl is convex or swollen below the suture*, as in *P. subacuta*, not flattened as in *acuta* and *goniasmos*. The columella is longer than in *goniasmos*, basal lip generally more erect, white, with a brown edge. Base green (becoming dull greenish-brown with age), with a chestnut zone below the periphery. Aperture broadly open, truncate-oval, the outer arc broadly rounded; teeth small, one or two, the inner tooth inconstant.

Alt. 28, diam. 51.3 mm. Constant Spring.
" 26, " 44 " Constant Spring.
" 30.5, " 57 " Stony Hill.

Only "dead" shells were picked up on Stony Hill. They are much larger than the types from Constant Spring. Shells from Bog Walk, collected by Mr. Wm. J. Fox in 1891, are evidently referable to the same race.

Sagda.

Beck based the genus *Sagda* on two species: *S. alveolata* Beck, based on Férussac, *Histoire*, etc., pl. 51A, fig. 1 (a false reference, possibly intended for pl. 51B, fig. 4), and *S. australis*=*S. cookiana* (Gmel.). The first of these was selected as type of the genus by Gray and Herrmannsen, in 1847; but since its identity is uncertain, no later author having determined the species, the subsequent selection of *S. cookiana* Gmel. as type by von Martens, should be accepted.

Much confusion in collections existed among the larger species for many years, and indeed still exists. Even with the series we now have they are difficult, although the recognition of a greater number of species does away with much of the variability formerly thought to exist. The specific characters, once mastered, appear to be rather constant, though sometimes not conspicuous at first sight. *Helix epistylium* Müller, formerly thought to be a *Sagda* and variously identified, has been shown by Mörch to be a *Streptaxis,* not a Jamaican shell. *H. epistylioides* Fér. we have not satisfactorily identified, and it probably has not been rediscovered. As figured and described, it is more strongly sculptured than any of the known species.

Sagda jayana (C. B. Adams). Plate XLIII, figs. 8 to 12.

Helix jayana C. B. Ad., Proc. Boston Soc. Nat. Hist., II, p. 17, 1845.
(?) *Epistylia conica* Swainson, Malacology, p. 165, fig. 18*a*, 1840.

This species was described by a parallel-column comparison with "*Helix epistylium* Müll." of C. B. Adams = *Sagda cookiana* Gmel. The description might apply to several of the large obtusely pyramidal forms, except for the phrase "t. latiore, subtus *latissime et profunde indentata,*" which unmistakably indicates the *Sagda* of the region about Stony Hill, in St. Andrew Parish, some eight miles from Kingston.

The shell is pyramidal, with dome-shaped summit, the spire very wide and steep-sided as far up as the upper third or fourth; last whorl much depressed, the base deeply and very broadly excavated around the axis, its greatest convexity nearer the periphery than to the axis. Surface very finely but distinctly striate, and having a microscopic sculpture like a woven fabric. Aperture less deeply lunate than in *S. adamsiana.* Basal lamella slightly over a half whorl long, its lower end visible deep in the throat. Columellar lamella longer, very stout, extending strongly nearly to the edge of the columellar margin. Alt. 24½, diam. 26 mm. with 10 whorls, or larger, diam. 29½ mm.

Up to the half-grown stage, 5 to 8 whorls, the shell is much depressed, the last whorl subangular, base flattened and not much excavated at the axis; aperture narrowly lunate; lamellæ as in the adult stage. A shell of 6½ whorls measures: alt. 10.3, diam. 18 mm.

The specimens described and figured are from Stony Hill, near Constant Spring, where it lives in company with *S. cookiana* Gmel., a circumstance which probably influenced Prof. Adams to compare them in his original description.

The most important features differentiating this species from *S. adamsiana* are: the very broad excavation of the base, the wide spire, and the nearly emerging columellar lamella. We may add also the shape of the shell in the half-grown and younger stages, wherein the base is far less convex than in *S. adamsiana*, and the aperture much narrower. The lamellæ are substantially alike in the two species except that the columellar lamella extends strongly upon the columellar margin, so that it is visible in the aperture of *S. jayana*, but not visible or only weakly in *S. adamsiana*.

The half-grown young shells resemble *S. connectens* (C. B. Ad.) very closely in shape, but they differ by the columellar lamella, which appears strong in a view in the aperture, while in *S. connectens* it is not visible from the mouth.

Swainson's figure of *Epistylia conica* (*Malacology*, p. 165, fig. 18*a*), has perhaps more resemblance to *S. jayana* than to any other species, but it is rude and of very uncertain application to this or any species. Later in the same work Swainson has an *Epistyla conica* (p. 331) based on fig. 281 of Sowerby's *Manual*, which represents *Sagda cookiana*. We have confirmed the synonymy of *S. jayana* given in the *Manual of Conchology*, IX, p. 64.

A small race of *S. jayana* occurs at Bog Walk, where it was collected by Messrs. Wm. J. Fox and C. W. Johnson. The shell measures: alt. 16.3, diam. 20 mm., with nearly 8 whorls. It will probably prove to be a distinct subspecies.

Sagda adamsiana n. sp. Plate XLIII, figs. 1 to 7.

Sagda jayana Pilsbry and Brown, Proc. A. N. S. Phila., 1910, p. 517, and probably of other authors on the Mandeville fauna.

The shell is pyramidal, with dome-like summit and an enlarged, prominent, well-rounded last whorl, more ample than that of *S. jayana;* base convex, rather deeply but narrowly impressed in the centre, its greatest convexity midway between axis and periphery. Surface finely, rather weakly striate, and in places showing traces of a microscopic woven texture. Aperture deeply lunate. Basal lamella somewhat over a half whorl long, situated outside of the greatest convexity of the base, its end visible deep in the throat. Columellar lamella as long as the other, its lower end weakly or not visible in the mouth.

Alt. 27, diam. 29½ mm.; 10½ whorls.
" 23½, " 28 " 9¾ "
" 21½, " 24 " 9½ "

Young shells of 6 or 7 whorls are depressed with very convex base and narrow axial impression, the basal margin of the aperture much more deeply curved than in *S. jayana*. Basal lamella nearly a whorl long, extending almost to the lip. Columellar lamella about a half whorl long, and immersed, as in adults. A shell of 6½ whorls measures: alt. 9½, diam. 15½ mm. At this and earlier stages the axis is perforate. This species, commonly known in collections as *S. jayana*, inhabits the region of Mandeville in Manchester, where it is very abundant and generally dispersed. The types are 100,868, A. N. S. P., from the ridge near Lincoln. They were catalogued as *S. jayana* in our former paper (these PROCEEDINGS, 1910, p. 517).

Besides the several differences noticed under *S. jayana*, the last whorl is both deeper and broader in this species, in its fullest development projecting beyond the general outline of the side, and appearing somewhat disproportionately enlarged beyond the preceding whorls. The adolescent stages are even more distinct from corresponding stages of *S. jayana* than the adult shells. With several hundred shells before us for study, we find the differential characters of *S. adamsiana* remarkably constant.

Named in honor of Professor C. B. Adams, whose *Contributions to Conchology* form the foundation of Jamaican malacology.

Sagda montegoensis n. sp. Plate XLIII, figs. 13, 14.

The shell resembles *S. adamsiana* in shape and the internal lamellæ, but it is smaller; the last whorl is less convex above, more flattened below, the suture; the aperture is decidedly higher, the basal margin being more deeply curved. *The surface has a varnish-like gloss*, and under the compound microscope shows no minute sculpture; the last two or three whorls are only weakly, irregularly striate.

Alt. 20, diam. 23 mm.; 9 whorls.
" 21.1, " 21.4 " 9¼ "
" 17.2, " 21 " 8 "

Orange Hill, Montego Bay; types No. 104,452, A. N. S. P., collected by Dr. A. P. Brown, 1910.

This is probably the form listed from Montego Bay by Messrs. Henderson and Simpson as *S. epistylium* Müll.,[3] but, as noted above, that is not a Jamaican species.

Young shells, down to 4¾ whorls, diam. 9 mm., are imperforate. By breaking down a shell it appears that only about two whorls following the embryonic stage (of 1½ whorls) have the axis perforate. The perforate stage is therefore much shorter than in *S. adamsiana*.

S. montegoensis differs from *S. spei* by having the basal lamella nearer the periphery, being situated as in *S. adamsiana*. It was found in great profusion.

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[3] *Nautilus*, VIII, p. 2, No. 22.

Lucidella persculpta n. sp. Fig. 1.

The shell is related to *L. lineata*, and more especially to *L. foxi*. It differs from both by its much more depressed shape, smaller size and coarser spiral sculpture, which continues undiminished on the base to the axial callus. Whorls 4½, the last rounded peripherally, impressed around the axial callus. The edge of the well-expanded peristome is slightly scalloped above, but not so strongly as in *L. foxi*. The tooth within the upper lip is very small, that upon the basal lip strong and squarish, as in *L. foxi;* but, unlike that species, there is no tooth within the outer margin.

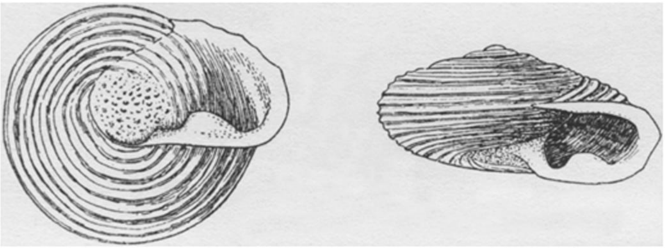

Fig. 1.—*Lucidella persculpta*.

Alt. 1.4, diam. 3 to 3.3 mm.; 4¼ whorls.

Orange Hill and Rose Mount, Montego Bay. Types No. 104,402, A. N. S. P., collected by A. P. Brown, September, 1910.

The nearest relative of this species is *L. foxi* Pilsbry, taken by Mr. Wm. J. Fox at a cave near Port Antonio,[4] much further east, on the northern shore. In *L. lineata* (C. B. Ad.) the spiral sculpture fails near the axial callus, leaving a small smoothish area; the spiral threads are finer, less unequal, and one is generally prominent at the periphery, which is thereby made angular or carinate, as described by Professor Adams. We consider Mandeville the type locality of *L. lineata*, as Adams's description applies exactly to the form found there.[5]

Lucidella trochiformis Pilsbry[6] is possibly identical with *L. nana* Pfr., but if so the radial undulation, producing nodules on the liræ, was not noticed by Pfeiffer.

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[4] So far as we know, this species does not inhabit the "Hôtel Fichfild," as Herr Wagner has it, Conchylien Cabinet, *Helicinidæ*, p. 343. The Tichfield Hotel is at Port Antonio.

[5] We were in error in writing *L. nana* Pfr. a synonym of *L. lineata* in these PROCEEDINGS for 1910, p. 525. It is a distinct species.

[6] *Nautilus*, XIII, p. 56.

The above-mentioned species are evidently related to *L. lirata* (Pfr.) = *Helicina lirata* and *unidentata* of authors, a species found on the mainland from Vera Cruz to the Orinoco River; also to *L. lamellosa* (Guppy) of Trinidad. For this little group the name *Perenna* Guppy might be used in a subgeneric sense.

The typical group of *Lucidella* consists of the larger Jamaican species: *L. aureola* Fér. (the type of *Lucidella*), *L. granulosa* C. B. Ad., 1850 (of which *L. undulata* Pfr., 1861, seems to be a synonym), *L. depressa* Gray (the type of *Pœnia* H. and A. Ad.), and *L. adamsiana* Pfr.

Lucidella yallahsensis n. sp. Fig. 2.

The shell is nearly white, smaller than *L. lineata*, a little more depressed, with *rounded periphery*. Apex smooth, the rest of the shell finely and densely striate spirally; the *base striate throughout*. Peristome expanded, thick, notched at the columella; the basal tooth large and squarish, as in *L. lineata;* the tooth within the upper lip rudimentary, represented by a slight swelling of the inner margin.

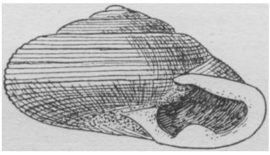

Fig. 2.—*Lucidella yallahsensis.*

Alt. 1.5, diam. 2.8 mm.; 4⅓ whorls.

Yallahs, parish of St. Thomas. Types No. 10211, A. N. S. P., from the Robert Swift collection (probably collected by Gloyne).

A series of over 30 individuals shows constant differences from *L. lineata* of the Mandeville region, differences which we must look upon as specific in the present state of our collections. Of this group of *Lucidella* we now know five or six Jamaican species:

L. yallahsensis n. sp. of the southern shore, eastward from Kingston.
L. lineata (C. B. Ad.) of the high interior, westward.
L. foxi Pils. and *L. persculpta* n. sp. of the north shore.
L. nana Pfr. "Jamaica."
L. trochiformis Pils. "Jamaica."

Geomelania.

Of the genus *Geomelania* there have been described from the island of Jamaica 29 species and varieties. We append an analytical key to these species, which has been found useful.

A. Whorls with transverse (axial) ribs and microscopic spiral striæ.
a. Length of shell, 10 mm. or more.
b. Labium separated by a groove or space from the penultimate whorl.
1. Labrum not separated from labium by a sinus, well produced obliquely and downward; size, 16 x 3.8 mm...*procera* C. B. Ad.
bb. Labium not separated from penultimate whorl.
c. 2. Labium expanded convexly, not much produced below; size, 11 x 3.5 mm..............................*minor* C. B. Ad.
cc. Labrum produced below.
3. Linguiform part of labrum much produced, subacute, 40 ribs per whorl; size, 14 x 3.3 mm., *gracilis* C. B. Ad.
4. Linguiform part excessively produced, very narrow and subacute, 26–30 ribs per whorl; size, 12 x 3.2 mm...*typica* C. B. Ad.
aa. Length of shell less than 10 mm.
d. Labium detached from the penultimate whorl.
e. Labium widely detached from the penultimate whorl.
5. Labium very widely detached from the penultimate whorl, linguiform part obtuse and produced laterally, 40 arcuate ribs per whorl; size, 9.4 x 3 mm....*costulosa* C. B. Ad.
6. Labium rather widely detached, linguiform part on lower half of labrum and scarcely produced; ribs, 35 per whorl; size, $6\frac{3}{4}$ x 1.6 mm...*exilis* C. B. Ad.
ee. Labium moderately or only slightly detached from the penultimate whorl.
7. Labrum separated from labium by a keyhole sinus, labium distinctly detached from the penultimate whorl; size, $5\frac{1}{2}$ x 1.2 mm., *sinuosa* Chitty.
8. Entire end of last whorl a little detached from the penultimate whorl and angular above, lip sharp, labium reflected (opposite the penultimate whorl); labrum (otherwise) scarcely reflected; size, 7.5 x 1.7 mm.............................*beardsleyana* C. B. Ad.
9. Labium slightly detached, prominent, thickened; labrum but little produced below, moderately thickened and reflexed, *elegans* C. B. Ad.
10. Labium slightly detached and separated from labrum by a slight sinus; ribs widely spread, 8 to a whorl, excessively elevated,

practically varices; the spiral striæ show strongly on the ribs; size, 7 x 2 mm., *grayana* C. B. Ad.

11. Labium slightly separated except at its upper extremity; 16 arcuate ribs per whorl; size, 9.7 x 2 mm. .... *striosa* C. B. Ad.

dd. Labium not detached from the penultimate whorl.

12. Linguiform part much produced below, subacute; 36 ribs per whorl; length, 9.2 mm., *gracilis var. parva* C. B. Ad.
13. Linguiform part excessively produced below; very narrow and subacute; length, 7.5 mm., *typica var. pygmæa* C. B. Ad.
14. Labrum but little produced below, moderately thickened and reflexed, not separated from labium by a sinus, whorls remaining five; size, 4.1 x 1.3 mm. .... *parvula*[7] P. & B.
15. Labrum rounded, not produced into a linguiform portion, separated from the labium by a sinus; size, 4.5 x 1 mm. .... *pygmæa* C. B. Ad.
16. Labrum obtuse, expanded, rounded, 40–50 ribs per whorl, 36 spiral striæ on the penultimate whorl; size, 4.1 x 1.1 mm. .... *microglypta* P. & B.

B. Whorls with transverse (axial) ribs, but without microscopic spiral striæ.

a. Length of shell, 10 mm. or more.

b. Labium separated by a groove or space from the penultimate whorl.

17. Labrum separated from labium by a sinus, reflexed and thickened, very much produced in the lower part; size, 17 x 5 mm .... *jamaicensis* Pfr.
18. Labium separated from the penultimate whorl except at its upper extremity. Linguiform part of labrum at the anterior extremity of the right side, well produced obliquely, not narrow, subacute; ribs 35 per whorl, prominent, acute-edged; size, 10 x 2 mm., *media* C. B. Ad.
19. Labium thickened and separated from penultimate whorl. Linguiform part excessively produced obliquely downward, narrow and acute; ribs 36 per whorl; size, 15 x 4.5 mm .... *fortis* C. B. Ad.
20. Labium separated from the penultimate whorl; linguiform part produced obliquely and laterally, wide, obtuse; ribs 38 per whorl, slender and arcuate; size, 16.5 x 4.75 mm. .... *magna* C. B. Ad.

bb. Labium not separated from the penultimate whorl.

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[7] This is the species described by Edward Chitty (*Cont. Conch. of Edward Chitty*, No. 1, Kingston, Jamaica, 1853, p. 6) under the name *Geomelania parva* Chitty. This name being preoccupied by *G. gracilis parva* C. B. Adams, we would propose the name *Geomelania parvula* for Chitty's species.

21. Labium thin, reflexed into the cavity of the penultimate whorl and appressed thereto; labrum slightly reflexed above, spreading widely and reflexed below. Ribs strong, flattened on forward side and obsolete on the anterior half of the last whorl; size, 13 x 4.7 mm.......*expansa* C. B. Ad.
22. Labium produced below; linguiform part of labrum much produced, subacute; 40 ribs per whorl; size, 14 x 3.3 mm.......*gracilis* C. B. Ad.
23. Linguiform part of labrum excessively produced obliquely and narrow; size, 13 x 4.7 mm.......*affinis* C. B. Ad.
24. Linguiform part excessively produced obliquely and acute at the lower part of the right side; size, 10 x 2.3 mm.......*conica* C. B. Ad.

aa. Length of shell less than 10 mm.

c. Labium separated from the penultimate whorl.

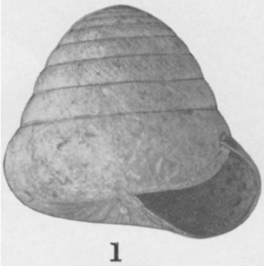
25. Whorls remaining, 7 or 8; linguiform part of labrum but slightly produced; ribs 25 per whorl, broad, obtuse; size, 5.3 x 1.2 mm.......*pauperata* C. B. Ad.
26. Labium thickened and slightly separated from the penultimate whorl; labrum well expanded, thin, reflexed; linguiform part moderately produced obliquely at the side, obtuse; ribs 33–35 per whorl; size, 6.3 x 2.2 mm.......*hilliana* C. B. Ad.

cc. Labium not separated from the penultimate whorl.

27. Appears smooth until the lens is used, then covered with rounded, close-set, transverse ribs; labrum produced on the right, labium appressed to the penultimate whorl at the upper half and separated from the labrum by a slight sinus; size, 9.1 x 2 mm.......*inornata* Chitty.
28. Labrum produced obliquely forward, rounded at the apex and reflexed; ribs 30 per whorl, coarse; size, 8 x 2.7 mm.......*vicina* C. B. Ad.
29. Labrum thin, slightly reflexed; linguiform part obtuse, moderately produced laterally at the lower part of the right side; labium a little thickened and reflexed; 28 small, obtuse ribs, which, on the last whorl, terminate a little below the periphery; remaining whorls 7 or 8; size, 8.1 x 2.2 mm., *pyramidatus* C. B. Ad.

EXPLANATION OF PLATE XLIII.

Figs. 1–5.—*Sagda adamsiana* n. sp.
Fig. 6.—*Sagda adamsiana* n. sp., showing interior of last whorl from above.
Fig. 7.—*Sagda adamsiana* n. sp., half-grown specimen.
Figs. 8, 9, 11, 12.—*Sagda jayana* C. B. Ad.
Fig. 10.—*Sagda jayana* C. B. Ad., showing interior of last whorl from above.
Figs. 13, 14.—*Sagda montegoensis* n. sp.
Figs. 15, 16.—*Pleurodonte acuta semperfluens* n. subsp.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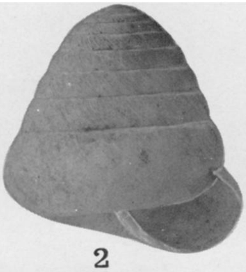
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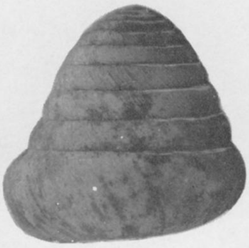
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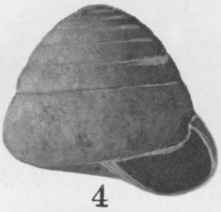
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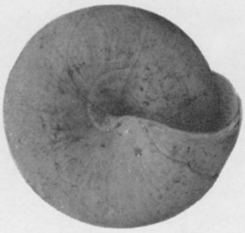
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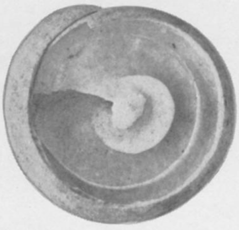
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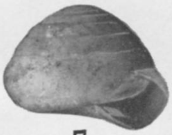
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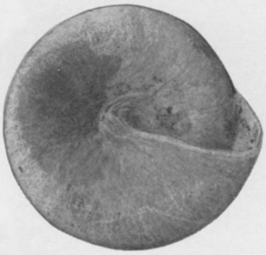
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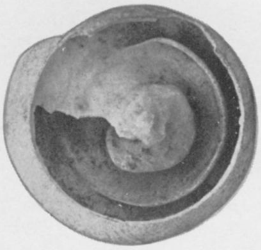
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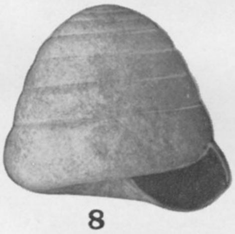
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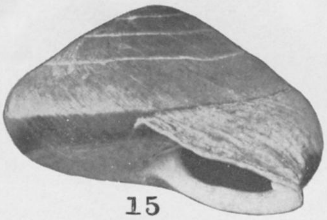
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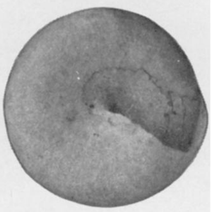
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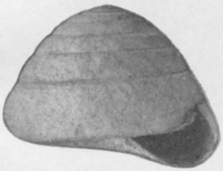
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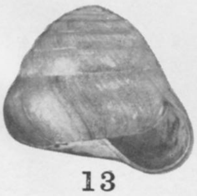
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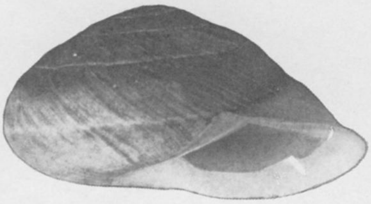
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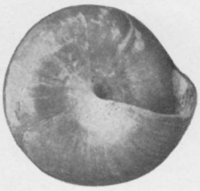
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PILSBRY AND BROWN: LAND MOLLUSCA OF MONTEGO BAY.